WHAT IS CLAIMED IS:

1. A method for manufacturing a hermetically sealed micro-device package encapsulating a micro-device and including a transparent window allowing light to pass into and out of a cavity containing the micro-device, the method comprising the following steps:

preparing, on a semiconductor substrate having a micro-device operably disposed thereupon, a first frame-attachment area having a plan that circumscribes the micro-device;

preparing, on a sheet of transparent material, a second frame-attachment area having a plan that circumscribes a window aperture portion of the sheet;

positioning, between the semiconductor substrate and the transparent sheet, a frame/spacer including a continuous sidewall having a plan on one side substantially corresponding to, and substantially in register with, the plan of the first frame-attachment area, having a plan on the opposite side substantially corresponding to, and substantially in register with, the plan of the second frame-attachment area, and having a height that exceeds the height of the micro-device; and

bonding the substrate, frame/spacer and transparent sheet together to form a hermetically sealed package encapsulating the micro-device in a cavity below the window aperture portion of the sheet.

2. A method in accordance with claim 1, wherein the semiconductor substrate is substantially formed of silicon (Si).

3. A method in accordance with claim 1, wherein the semiconductor substrate is substantially formed of gallium arsenide (GaAs).

4. A method in accordance with claim 1, wherein:

the step of preparing the first frame-attachment area comprises depositing metallic layers onto the semiconductor substrate; and

the step of preparing the second frame-attachment area comprises depositing metallic layers onto a surface of the transparent sheet.

5. A method in accordance with claim 4, wherein the frame/spacer is formed of a material having a CTE substantially matched to the CTE of the transparent sheet and to the CTE of the semiconductor substrate.

6. A method in accordance with claim 1, wherein during the step of bonding, the temperature of the window aperture portion of the sheet remains below the glass transition temperature (T_G) of the transparent material.

7. A hermetically sealed micro-device package encapsulating a micro-device and including a transparent window allowing light to pass into and out of a cavity containing the micro-device, comprising:

a semiconductor substrate having a micro-device operably disposed thereupon, the substrate having a first frame-attachment area formed thereupon having a plan that circumscribes the micro-device;

a sheet of transparent material having a window aperture portion defined thereupon, the sheet having a second frame-attachment area formed thereupon having a plan that circumscribes the window aperture portion; and

a frame/spacer positioned between, and hermetically bonded to, the semiconductor substrate and the transparent sheet, the frame/spacer including a continuous sidewall having a plan on one side substantially corresponding to, and substantially in register with, the plan of the first frame-attachment area, having a plan on the opposite side substantially corresponding to, and substantially in register with, the plan of the second frame-attachment area, and having a height that exceeds the height of the micro-device.

8. A method for simultaneously manufacturing multiple hermetically sealed micro-device packages, each package encapsulating a micro-device and including a transparent window aperture allowing light to pass into and out of a cavity containing the micro-device, the method comprising the following steps:

preparing, on a unitary semiconductor substrate having a plurality of micro-devices operably disposed thereupon, a first frame-attachment area having a plan that circumscribes each of the micro-devices;

preparing, on a unitary sheet of transparent material, a second frame-attachment area having a plan that circumscribes a plurality of transparent window aperture portions of the sheet;

positioning, between the semiconductor substrate and the transparent sheet, a frame/spacer including a plurality of sidewalls, the sidewalls collectively having a plan on one side of the frame/spacer that substantially corresponds to, and is substantially in register with, the plan of the first frame-attachment area, having a plan on the opposite side of the frame/spacer that substantially corresponds to, and is substantially in register with, the plan of the second frame-attachment area, and having a height that exceeds the height of the micro-devices;

bonding the semiconductor substrate, frame/spacer and transparent sheet together to form a multi-package assembly having a plurality of hermetically sealed cavities separated from one another by the frame/spacer sidewalls, each of the cavities containing one of the micro-devices positioned below one of the window aperture portions of the sheet; and

dividing the multi-package assembly into individual packages by parting completely through the substrate, frame/spacer sidewall and transparent sheet at locations between adjacent cavities;

whereby each individual package will encapsulate one of the micro-devices in a hermetically sealed cavity and include a transparent window aperture allowing light to pass into and out of the cavity.

9. A method in accordance with claim 8, wherein the semiconductor substrate is substantially formed of silicon (Si).

10. A method in accordance with claim 8, wherein the semiconductor substrate is substantially formed of gallium arsenide (GaAs).

11. A method in accordance with claim 8, wherein:

the step of preparing the first frame-attachment area comprises depositing metallic layers onto the semiconductor substrate; and

the step of preparing the second frame-attachment area comprises depositing metallic layers onto a surface of the transparent sheet.

12. A method in accordance with claim 11, wherein the frame/spacer is formed of a material having a CTE substantially matched to the CTE of the transparent sheet and to the CTE of the semiconductor substrate.

13. A method in accordance with claim 8, wherein during the step of bonding, the temperature of the window aperture portions of the transparent sheet remains below the glass transition temperature (T_G) of the transparent material.